Specifically, the Examiner alleges that Applicants have only shown a configuration of resistors that connect the inner pumping electrode to the Nernst electrode, without describing the Nernst voltage circuitry or the pump voltage circuitry, which apparently utilize the configuration of resistors to achieve negative feedback. Respectfully, Applicants traverse.

As stated by the Examiner, the term "negative feedback" as it is conventional understood to persons having ordinary skill in the art implies that the output of an amplification stage is fed back into an input of the amplification stage so that the overall gain of he amplification stage is reduced. In this sense, the Examiner is correct. It is well known in the art to use a conventional amplifier to control a gas sensor, such as the ones recited in the various claims under consideration. As the negative feedback to a conventional amplifier increases, the overall gain of the amplifier is reduced, thereby achieving a reduction in the amplitude of a ripple about lambda = 1, the ripple being caused by the Nernst voltage circuit and the pump voltage circuit being linked by a joint supply conductor. However, as the negative feedback increases, the pump current supplied to the pump cell is reduced. If the pump current is reduced below a certain minimum pump current, the pump cell may cease to operate correctly. Therefore, the requirements of the pump cell impose an upper limit on the negative feedback of the Nernst cell.

what are these?

The loaded voltage divider recited in claim 6 is designed to increase the negative feedback without causing the pump current to drop below the minimum pump current required to effectively operate the pump cell. In this manner, the resistors of the voltage divider may be fine-tuned to permit a maximum amount of negative feedback.

how? this is never explained

For at least the foregoing reasons, Applicants kindly request that the rejection of claim 6 under 35 U.S.C. § 112, first paragraph, be withdrawn. Further, to the extent that claims 7-12 were rejected under 35 U.S.C. § 112, first paragraph, as being dependent upon claim 6, Applicants also kindly request

that the rejection of these claims be withdrawn for at least the same reasons as discussed above with respect to claim 6.

III. THE REJECTION OF CLAIMS 6-12 UNDER 35 U.S.C. § 112, SECOND PARAGRAPH SHOULD BE WITHDRAWN

The Examiner has rejected claims 6-12 under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention.

With respect to claim 6, the Examiner asserts that it is unclear whether the Applicants are claiming the presence of a diffusion barrier on the probe. Claim 6 recites, inter alia, ". . .a Nernst measuring cell including: a Nernst electrode exposed to the gas mixture to be measured via a diffusion barrier . . . ." It is clear from the above excerpt of claim 6 that the diffusion barrier is not being claimed as an element of claim 6 since it is not positively recited. Accepted claim drafting practice permits inferential recitation of a workpiece or environmental element, if the workpiece or environmental element is not an element of the claimed invention. FABER, LANDIS ON MECHANICS OF PATENT CLAIM DRAFTING, 4th ed., § 16A. Thus, "diffusion barrier," as that term is recited in claim 6, is not indefinite and in proper form.

Furthermore, with respect to claim 6, the Examiner asserts that the limitations drawn to the "joint supply conductor" are confusing and unclear. Specifically, the Examiner asserts that the metes and bounds of the Nernst and inner pump electrodes being connected "at least in some sections" are unclear, and that the use of the term "joint supply conductor resistor" is unclear. Respectfully, Applicants disagree.

A phrase similar to "A and B being connected in at least some areas" is believed to be well-understood by the Patent Office, since the phrase is routinely found in numerous issued United States Letters Patents, and its meaning could not be more clear. Further, the Specification clearly recites a joint supply conductor resistor. For example, referring to Figure 2,

electrode 38 is initially connected to a contact point 52 via a printed conductor section 50, and electrode 16 is also connected to contact point 52 via a printed conductor section 54. A joint supply conductor 56 connects contact point 52 to input 34 of circuit arrangement 32. (Specification, page 6, lines 17-23). Also, the Specification clearly states that joint supply conductor 56 has a resistor R3. (Specification, page 6, lines 25-27). Thus, in the example illustrated in Figure 2, R3 is the joint supply conductor resistor.

Further referring to claim 6, the Examiner asserts that the presence of a loaded voltage divider including "a plurality of resistors" appears to refer to the combination of resistors R1, R2, and R3 of the various Figures. Thus, the Examiner states that it is unclear what would constitute the "joint supply conductor resistor" if the plurality of resistors includes the combination of resistors R1, R2, and R3. Respectfully, Applicants traverse.

Contrary to the Examiner's assertion, claim 6 does not limit the "plurality of resistors" to the combination exemplified by the Examiner. A "plurality" of resistors may include two resistors. Thus, for example, R1 and R2 may constitute the "plurality of resistors," while R3 constitutes the joint supply conductor resistor. Further, a person having ordinary skill in the art would understand that R1 may be created using a plurality of resistors connected in series and/or in parallel. Thus, while R3 may constitute the joint supply conductor resistor, the plurality of resistors may include more than two resistors. Therefore, it is respectfully submitted that the phrases "a plurality of resistors" and "joint supply conductor resistor" are unambiguous and proper in their current form.

problem R1, R2, are not a voltage divider w/o R3

Furthermore, with respect to claim 6, the Examiner asserts that the limitations drawn to the joint supply conductor are unclear because cooperation between the various components of the joint supply conductor and the Nernst and pump electrode are not clearly established. It appears that the Examiner is basing the rejection on the same issues discussed above with respect to the 35 U.S.C. § 112, first paragraph, rejection. Thus, in

not true my beef here is the Vague bunch of stuff thrown together

My beef but was that I don't understand what you made

opposition to the Examiner's rejection of claim 6 based on this line of reasoning, Applicants incorporate herein all the arguments stated above against the rejection of claim 6 under 35 U.S.C. § 112, first paragraph.

With respect to the language recited in claims 6 and 7, the Examiner contends that it is unclear what constitutes an "optimized" or "maximized" feedback. Respectfully, Applicants traverse.

As stated above, the loaded voltage divider recited in claims 6-7 is designed to increase the negative feedback without causing the pump current to drop below the minimum pump current required to effectively operate the pump cell. In this manner, the resistors of the voltage divider may be fine tuned to permit a maximum amount of negative feedback. Thus, it is clear what constitutes "optimized" or "maximized," i.e., "optimized" or "maximized" negative feedback may be accomplished by choosing the resistors of the voltage divider such that the negative feedback is as high as possible, without adversely affecting the pump cell.

there is no understanding of what constitutes max-opt. etc.

what might this be

With respect to claim 10, the Examiner asserts that it is unclear what the metes and bounds of the "minimized" cross section of the conductor section. Specifically, the Examiner contends that the term "minimized" is not defined by the claims, and the Specification does not provide a standard for ascertaining the requisite degree of the term. Respectfully, Applicants disagree.

Reducing the cross section is another way to increase the resistance value of the joint supply conductor section. Thus, reducing the cross section of the joint supply conductor section is another way of increasing negative feedback between the Nernst voltage circuit and the pump voltage circuit. (Specification, page 3, lines 22-23). However, as explained above, as the negative feedback increases, the pump current supplied to the pump cell is reduced. If the pump current is reduced below a certain minimum pump current, the pump cell may cease to operate correctly. Therefore, the requirements of the pump cell impose an upper limit on the negative feedback of the

Nernst cell, and as such, a minimum cross section for the joint supply conductor. Thus, the Specification clearly defines the metes and bounds of the term "minimized," as that term is used in claim 10.

With respect to claim 11, the Examiner asserts that it is unclear how the specified printed conductor sections and contact point cooperate with the other specified elements of the invention, namely, the voltage divider resistors. Respectfully, Applicants traverse.

In order for a claim to withstand scrutiny under 35 U.S.C. § 112, second paragraph, the claim must "set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. [However, definiteness] of claim language must be analyzed, not in a vacuum, but in light of . . . [the] content of the particular application disclosure . . . ." MPEP 2173.02. The Specification clearly describes how the specified printed conductor sections and the contact point cooperate with the other specified elements, namely, the resistors of the voltage divider. Referring to Figure 2, for example, the detection voltage circuit (Nernst voltage circuit) and the pump voltage circuit are coupled to circuit arrangement 32 via the joint supply conductor of electrodes 16 and 38, respectively. In Figure 2, an equivalent circuit diagram illustrating how electrodes 16 and 38 are connected to circuit arrangement 32 is shown. It is clear from the equivalent circuit diagram that electrode 38 is initially connected to a contact point 52 via a printed conductor section 50. Electrode 16 is also connected to contact point 52 via a printed conductor section 54. (Specification, page 6, lines 14-19; Figure 2). Conductor section 50 has an internal resistor R1, conductor section 54 has an internal resistor R2, and conductor section 54 has an internal resistor R3. Resistors R1, R1, and R3 form a loaded voltage divider, the constant current applied to Nernst measuring cell 12 flowing via conductor sections 54 and 56, while pump current I_p flows via conductor sections 50 and 56. (Specification, page 6, lines 25-28; Figure 2). Thus, it is clear how the specified

printed conductor sections and contact point cooperate with the other specified elements of the invention.

Also with respect to claim 11, the Examiner asserts that there is no antecedent basis for the term "the cross section of the joint supply conductor." Respectfully, Applicants traverse.

Claim 11 depends from claim 10, and claim 10 recites "The probe according to claim 6, wherein: **a cross section of the joint supply conductor** section is minimized." (emphasis added). Thus, it is clear that the term "the cross section of the joint supply conductor," as that term is used in claim 11, has proper antecedent basis.

With respect to claim 12, the Examiner asserts that it is unclear what constitutes being "downstream" from the Nernst and inner pump electrodes and that it is unclear what constitutes being "directly" downstream from said electrodes. Respectfully, Applicants traverse.

As stated above, "definiteness of claim language must be analyzed, not in a vacuum, but in light of . . . [the] content of the particular application disclosure . . . ." MPEP 2173.02. Further, the mere fact that a term or phrase used in the claim is not used in the Specification does not mean, necessarily, that the term or phrase is indefinite. There is no requirement that the words used in a claim must match those used in the Specification. MPEP 2173.05(e). The essential inquiry is whether a person having ordinary skill in the art, in light of the Specification, would understand the meaning and scope of a term.

Although the Specification does not specifically recite a contact point located **downstream** from the Nernst and pump cells, Applicants respectfully submit that a person having ordinary skill in the art reading the Specification would understand the meaning and scope of "downstream," as that term is used in claim 12. For example, Figure 2 shows an exemplary circuit diagram illustrating how electrodes 16 and 38 may be connected to circuit arrangement 32. It is clear from Figure 2

that electrode 38 is connected to contact point 52 and electrode 16 is also connected to contact point 52. **Contact point 52 is arranged inside probe 10 and is located at a geometric distance a from electrodes 16 and 38, respectively. A geometric distance b for joint supply conductor section 56 of electrodes 16 and 38 results, corresponding to section a.** (Specification, page 6, lines 16-24). Furthermore, the exemplary embodiments illustrated in Figures 3a and 3b show the contact point 52 arranged inside probe 10 in essentially the same orientation as that of the exemplary embodiment illustrated Figure 2. Thus, the Specification makes clear the meaning and scope of the term "downstream," as that term is used in claim 12.

Also with respect to claim 12, the Examiner asserts that it is entirely unclear what the limitation "the contact point is located directly downstream of the Nernst electrode and the inner pump electrode at a first distance such that a second distance of the joint supply conductor section is of a maximum length" is referring to, namely, that Applicants have not defined what a "second distance" of the joint supply conductor section is. Respectfully, Applicants traverse.

As stated above with respect to the exemplary embodiment illustrated in Figure 2, contact point 52 is arranged inside probe 10 and is located at a geometric distance **a** from electrodes 16 and 38, respectively. A geometric distance **b** for joint supply conductor section 56 of electrodes 16 and 38 results, corresponding to section **a**. (Specification, page 6, lines 21-24). Thus, **a** and **b** define two discrete distance, i.e., a first distance and a second distance, each of which are clearly defined with respect to each of the exemplary embodiments of Figures 2, 3a, and 3b.

Still further with respect to claim 12, the Examiner asserts that it is unclear what the language drawn to a conductor section having a "maximum length" means. Respectfully, Applicants disagree.

Increasing the length of the joint supply conductor is another way to increase the resistance value of the joint supply

conductor section. Thus, increasing the length of the joint supply conductor section is another way of increasing negative feedback between the Nernst voltage circuit and the pump voltage circuit. (Specification, page 7, lines 4-9). However, as explained above, as the negative feedback increases, the pump current supplied to the pump cell is reduced. If the pump current is reduced below a certain minimum pump current, the pump cell may cease to operate correctly. Therefore, the requirements of the pump cell impose an upper limit on the negative feedback of the Nernst cell, and as such, a maximum length for the joint supply conductor. Thus, the Specification clearly defines the metes and bounds of the term "maximized," as that term is used in claim 12.

For at least the foregoing reasons, Applicants respectfully request that the rejection of claims 6-12 under 35 U.S.C. § 112, second paragraph, be withdrawn.

IV. CONCLUSION

In light of the foregoing, Applicants respectfully submit that pending claims 6-12 are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

KENYON & KENYON

Dated: 3/15, 2002

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